

FENCE LATCH MECHANISM

TECHNICAL FIELD AND BACKGROUND OF THE INVENTION

The present invention generally relates to a latch mechanism and, more particularly, to a latch mechanism for a fence.

SUMMARY OF THE INVENTION

The present invention provides a fence latch mechanism that includes a base member, a fastener, and a hook member. The base member includes a post mounting member, for mounting to a post, and a flange. The post mounting member includes mounting openings for receiving the fastener, which extends through the mounting openings for mounting the post mounting member around the post. The flange extends from the post mounting member and has a lateral extent extending transversely with respect to the post mounting member and with respect to the post. The hook member has a gate mounting member for mounting to a gate, with the hook mounting member engaging the flange for latching the gate to the post. The hook member includes first and second tines depending from the gate mounting member. The flange includes a first opening for receiving and retaining one of the tines and a slotted second opening for receiving the other tine. The second opening permits the gate to swing about the post in a first direction about the tine in the first opening while the second opening limits swinging of the gate in a second direction opposed from the first direction and the first opening prevents swinging of the gate about the other tine.

In one aspect, the post mounting member comprises a C-shaped member. For example, the C-shaped member may include a pair of arms, with each of the arms having one of the mounting openings. For example, the mounting openings may comprise square openings.

According to other aspects, the gate mounting member also comprises a C-shaped member. For example, the C-shaped member may include a pair of arms, with each of the arms having a mounting opening for receiving a fastener for securing the hook member to the gate.

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In yet other aspects, the hook member further includes a C-shaped member, with the first and second tines depending from the C-shaped member. Preferably, the first and second tines depend upwardly from the C-shaped member.

According to another form of the invention, a fence latch mechanism includes
5 a base member for mounting to a post, with the base member having a post mounting member and a flange. The post mounting member straddles the post and mounts the post mounting member around the post and, further, includes a central axis. The latch mechanism further includes a hook member for mounting to a gate, which engages the flange of the base member to latch the gate to the post. The flange extends from the post mounting member and
10 has a lateral extent extending transversely with respect to the post mounting member and outwardly from the central axis of the post mounting member. When engaged with the flange, the hook member is pivotal about a generally horizontally fixed pivot axis in the flange, which is offset from the central axis wherein the gate can swing about the post in a first direction from a first position about the pivot axis but cannot swing about the post from
15 the first position in a second direction opposed from the first direction.

In another aspect, the post mounting member comprises a C-shaped member. In a further aspect, the C-shaped member includes a pair of arms, with each arm having a mounting opening. A fastener extends through the mounting openings for mounting the base member to the post.

20 In another aspect, the hook portion includes a gate mounting member, which comprises a C-shaped member.

It can be appreciated that the present invention provides a latch mechanism that is relatively simple to assemble and provides a hinge for a gate that permits the gate to swing about a post from a closed position to an open position in one direction only, which
25 may be particularly useful in applications such as pool fence applications where a quick egress and limited ingress through a gate is desirable.

These and other objects, advantages, purposes, and features of the invention will become more apparent from the study of the following description taken in conjunction with the drawings.

30 DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view illustrating the latch mechanism of the present invention mounted to a gate post and a gate frame;

FIG. 2 is an exploded plan view of the latch mechanism of FIG. 1;

FIG. 3 is a similar view to FIG. 2 illustrating the latch mechanism components oriented in a position that corresponds to the gate frame being in a closed position;

FIG. 4 is a similar view to FIG. 3 of the latch mechanism illustrating the configuration of the latch mechanism that corresponds to the gate frame being moved to an open position;

FIG. 5 is a bottom perspective view of the latch mechanism of FIG. 2;

FIG. 6 is a side elevation view of the latch mechanism of FIG. 3;

FIG. 7 is a perspective view of the latch mechanism of FIG. 4; and

FIG. 8 is an enlarged plan view of the base member of the latch mechanism of FIGS. 1-7.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, the numeral 10 generally designates a latch mechanism of the present invention. Latch mechanism 10 is particularly suitable for latching a fence gate 14 to a post 16. Furthermore, as will more fully describe below, when combined with a standard hinge 12, latch mechanism 10 together with hinge 12 forms a gravity hinge set. Thus, in combination with an upper standard hinge 12, latch mechanism 10 of the present invention creates a self-closing gate 14. Furthermore, as will be more fully described below, latch mechanism 10 permits gate 14 to pivot about post 16 in a clockwise direction as viewed from FIG. 1 but prohibits gate 14 from swinging in a counter-clockwise direction (as viewed in FIG. 1) so that latch mechanism 10 is particularly suitable for use where a quick egress and a limited ingress is desirable, such as through a pool fence.

As best seen in FIG. 2, latch mechanism 10 includes a base member 18 and a hook member 20. Preferably, both base member 18 and hook member 20 are formed from a metal material; however, it can be appreciated that other materials may be used. Base member 18 includes a post mounting member 22, for mounting to gate post 16, and a flange 24. As best seen in FIG. 2, post mounting member comprises a generally C-shaped member with extended arms or flanges, which provide mounting surfaces for a fastener, as will be more fully described below, to secure base member 18 to post 16.

Hook member 20 similarly includes a gate mounting member 26 and a pair of tines or pins 28 and 30 for engaging flange 24. Gate mounting member 26 similarly comprise a C-shaped member with extended arms or flanges, which provide mounting surfaces for a fastener to secure hook member 20 to the tubular frame of gate 14. Flange 24 of base member 18 includes a first opening 32 for receiving tine 28 and a slotted second

opening 34 for receiving tine 30 of hook member 28. In this manner, when hook member 20 is engaged with flange 24 by tine 28, hook member 20 is free to pivot about a pivot axis 36 which extends through opening 32 to permit gate 14 to swing, as noted above, about gate post 16 in a clockwise direction. Slotted opening 34 is sized to limit the return counterclockwise swing of gate 14 to the closed position in which gate 14 is aligned with fence 17. When gate 14 is aligned with fence 17, gate mounting member 26 is generally aligned along a common central axis 38 with post mounting member 22 (FIG. 3).

As can be appreciated from FIGS. 2-4, flange 24 has a lateral extent that extends transversely with respect to post mounting member 22 and which extends on either side of central axis 38. Opening 32 is offset from central axis 38. Similarly slotted opening 34 is offset from central axis 38 on the other side of central axis 38 to create the moment force that restrains rotation of hook member 20 about axis 36. Furthermore, the offset distance d1 of opening 32 from central axis 38 is preferably approximately equal to the offset distance d2 of slotted opening 34 from central axis 38 so that when gate 14 is in its closed position, the moment force on hinge 12 and on latch mechanism 10 is essentially reduced to zero so that gate 14 will remain in its closed position unless acted upon by an outside force in the clockwise direction (as viewed in FIG. 1).

Referring to FIG. 4, when hook member 20 is pivoted in a clockwise direction (as viewed in FIG. 4) about pivot axis 36 tine 30 is guided by slotted opening 34 in the clockwise direction and thereafter exits slotted opening 34 with member 20 only engaged with flange 24 by tine 28. In this manner, hook member 20 is pivotal with respect to flange 24 about a horizontally fixed pivot axis, namely, pivot axis 36.

Referring to FIG. 5, tines 28 and 30 depend from a C-shaped member 40 which is secured to gate mounting member 26, for example by welding. Referring again to FIG. 1, preferably tines 28 and 30 depend upwardly from C-shaped member 40; however, it can be appreciated that tines 28 and 30 may be oriented to depend downwardly from C-shaped member 40 with C-shaped member 40, therefore, positioned over flange 28.

Referring to FIG. 6, as noted, post mounting member 22 comprises a C-shaped member with extended flanges with mounting openings 42 and 44, which receive a fastener, such as a bolt, for securing post mounting member 22 to post 16. Preferably mounting openings 42 and 44 comprise non-circular openings, with the fasteners, such as bolts, having a square-shaped neck that seats in the mounting opening to facilitate the installation of the post mounting member on the post. Similarly, gate mounting member 26 comprises a C-

shaped member with extended flanges, which similarly include mounting openings 46 and 48 respectively. Mounting openings 46 and 48 are similarly preferably non-circular-shaped openings, such as square-shaped openings, and receive a fastener, preferably a fastener with a squared neck to facilitate installation.

5 Accordingly, the present invention provides a latch mechanism that permits a gate, for example, to pivot about a fence post from a closed position to an open position in a single direction, for example in a clockwise direction. In other words, the gate cannot swing about the post from its closed position in an opposed direction for example, a counterclockwise direction. Furthermore, the installation of the latch mechanism is simple,
10 requiring a minimal number of parts. As noted above, latch mechanism 10 is particularly suitable for use in combination with a standard hinge (hinge 12) to form a gravity hinge set. To facilitate the mounting of base member 18 to post 16 and to limit the rotation of base member 18 about post 16, post mounting member 22 optionally includes an opening 49 (FIG. 1), such as a hole, for receiving a fastener, such as a set screw, that is urged into engagement
15 with the post to thereby fix the position of member 18 relative to post 16.

The standard hinge 12 is formed by a pair of brackets 50, 51 that mount to the post 16 and the gate 14, respectively. Each bracket 50, 51 includes a pivot cylinder 52, 53, respectively, which are aligned and connected by a pivot pin 54. Preferably, the pin 54 extends along a vertical axis 56 that passes through the central axis 38 of base member 18,
20 but offset from pivot axis 36. In this manner, when gate is opened and no longer held in place, the weight of the gate will generate a moment force that will return the gate to its closed position, with tine 30 guided into slotted opening 34. Once in its closed position, the gate cannot swing about the post in an opposite direction, for example, in the illustrated embodiment, in a counterclockwise direction. As would be understood by those skilled in the
25 art, the height of the latch assembly 10 may be adjusted to increase the force under which the gate will close. Moreover, hinge 12 and latch mechanism 10 may be adjusted to compensate for slight grade changes making it possible to install gate 14 on a hill and yet keep the bottom of the gate close to the ground. As noted above, this moment force will essentially reduce to zero when gate 14 is its closed position with tine 30 substantially fully seated in slotted
30 opening 34.

While one form of the invention has been shown and described, other forms will now be apparent to those skilled in the art. Therefore, it will be understood that the embodiments shown in the drawings and described above are merely for illustrative purposes,

and are not intended to limit the scope of the invention, which is defined by the claims, which follow as interpreted under the principles of patent law including the doctrine of equivalents.